



DISEASE & PRE-VINTAGE UPDATE

Weather events

Recent rainfall events have raised questions amongst some growers of potential Botrytis and Downy Mildew infection risks. This bulletin gives an overview of these weather events and risks, and provides some advice going into vintage.

The table to the right provides a snapshot of recent rainfall across Barossa and other South Australian wine regions. Rainfalls were considerably higher in the southern part of the state especially in the first event on Thursday. Rainfalls were higher across Eden Valley but relatively uniform across Barossa Valley.

The table on page 3 provides a summary of key climatic data for the growing season to-date including comparisons to longer term averages at Nuriootpa.

Notable weather events for the 2020-2021 growing season to-date:

- frost on 27 September (minor isolated damage)
- 38mm rain on 5-9 October (Nuriootpa)
- isolated Downy Mildew primary infection events on 8 and 24 October
- heat burst on 27-28 November (37-41.8°C at Nuriootpa)
- strong winds on 5-7 December (gusts up to 98kmh at Nuriootpa)
- heatwave on 9-11 January (35-38°C at Nuriootpa)
- heatwave on 21-24 January (35-41.4°C at Nuriootpa)
- 14-25 mm rain over 20hrs on 4-6 February*

Total rainfall for the two-day period*

**1pm Thursday 4 Feb
to
5pm Saturday 6 Feb 2021**

Location	mm
Nuriootpa BOM	18
Ebenezer MEA	14
Marananga MEA	18
Bethany MEA	18
Lyndoch MEA	17
Roseworthy BOM	14
Craneford MEA (EV)	25
Clare BOM	10
Noarlunga BOM	37
Loxton BOM	3
Mt Lofty BOM	33
Coonawarra BOM	26

February tips

- ✓ Look out for and remove any new Caltrop germinations subsequent to the rain.
- ✓ Plan-ahead your weed control – a post vintage knockdown spray for the undervine and/or midrow may be merited after recent rain to avoid later problems.
- ✓ When was the last time you flushed driplines? Row-end vines can start suffering if sediment has built-up.
- ✓ The AGW website has some useful guides and information for grape growers <https://www.agw.org.au/media-and-events-centre/coronavirus-covid-19/practical-advice-for-vineyards-and-wineries/>

Powdery Mildew

Despite what looked to be elevated risk early in the season, Powdery Mildew (PM) has been well controlled this season and PM disease pressure has been relatively low. The recent rain will not directly increase PM risk significantly. Harvest timing is looking about one week ahead of last vintage and the risk of late-season leaf infection in later varieties such as Cabernet Sauvignon and Grenache is unlikely to be an issue this year. Nonetheless, it is always worth having a **look for any PM signs when collecting grape maturity samples**. Look for PM on unset green berries and laterals inside denser canopies. Young non-cropping vines can be susceptible to PM infection especially if they are vigorously growing and have shaded leaves and shoots. The key is to ensure that shoots/canes which are required for next season do not become infected which can lead to premature leaf-fall, scarred canes and higher PM risk next season. Sometimes a low rate of wettable sulphur is merited.

Downy Mildew

Disease modelling of the weather conditions at Nuriootpa across 5-6 February (Fri-Sat) were conducive to a Downy Mildew Primary Infection (DMP), however **this event presents very low DM risk at this stage of the season** because:

- older mature vine leaves have a degree of resistance to Downy Mildew
- the first primary infection produces a very small number of 'oilspots' (these are often not seen)
- multiple rain events at optimal times over ~4 weeks would be required to build significant disease levels
- mature berries are immune to Downy Mildew. Stalks can be infected, but this takes high disease levels
- most vineyards will be harvested before DM could become an issue even if weather favoured spread
- very low risk now of developing DM canopy infections that would be detrimental to grape load purity
- the potential for post-harvest leaf-loss due to DM having any significant effect on vine health is negligible

Spray control options are now in any case very limited due to spray withholding periods. *Peratec Plus* is a registered DM control option which might be allowed by some grape purchasers (7 day withholding in AWRI Dogbook), however the benefit-cost of this product would be questionable in the absence of significant infections. With full coverage this product can eradicate most DM, but it has no ongoing protective capacity.

There are **two potential scenarios that merit diligent monitoring for DM from hereon**.

- a) **Late-ripening varieties** such as Grenache. Grenache is a variety more susceptible to DM leaf infection.
- b) **Young vines**. Fresh growth is susceptible to DM and late-season leaf loss might be detrimental.

Even in these two cases though, spraying with *Peratec Plus* or *EcoCarb Plus* (suppression only) is unlikely to be merited or desirable. If a second generation of oilspots were found later in the season (eg clusters of oilspots in one or more vines) it would be recommended to seek expert advice and talk to your grape purchaser before considering spraying. Downy Mildew infections do not present a carryover risk to the next growing season.

Bunch Rot

The recent rain periods created a long period of bunch wetness at moderate temperatures conducive to initiate bunch rot associated fungi (eg *botrytis cinerea*) on susceptible vine tissues. The chart below shows two leaf wetness periods, with the latter period *potentially* providing up to ~20hours of bunch wetness at 12 to 14°C over that period. These extended periods of high humidity and free moisture were favourable to the sporulation and spread of botrytis spores, although at moderate-to-low temperatures the colonisation of *susceptible tissue* is much slower than it would be at 20+°C. Rain did not occur throughout this period though and it was often windy so as to reduce the duration of free moisture on berries.

Low levels of berry splitting were reported in some Eden Valley **Riesling** vineyards after the small rainfall event on 26 January which created rot susceptible berries prior to this recent event. There have been some isolated reports of botrytis being found in some of these split berries. Tight bunches and denser canopies increase the risk of infection and further spread, although bunches are in many cases less compact this season due to variable fruit-set. Vineyards that suffered some fruit-zone leaf-loss due to the recent heatwave events are in some ways now less susceptible to bunch rot, although sunburnt berries can be infected if further long periods of warm-wet weather occur. Botrytis is unique in that it can grow on dead plant tissue under ideal conditions (eg dead berries and old flower caps stuck in bunches). **If the weather remains dry from hereon then the risk of significant bunch rot will remain low until harvest.** This recent event has however increased botrytis inoculum levels which can provide for more rapid development in susceptible vineyards if we get further warm-wet events. **Regular monitoring and keeping your grape purchase/winemaker informed on disease issues is the key hereon.**

Very little if any berry splitting has been reported in red varieties and this season does not possess the high-risk precursors to botrytis that were seen in 2010-2011. In more susceptible varieties such as Riesling, the potential for latent infection at flowering was generally low this season, and appropriate sprays at late-capfall on susceptible varieties/vineyards would mitigate that risk. Nonetheless, the primary vineyard risk factors are the presence of damaged tissue, tight bunches, thin berry skins and dense vine canopies. Poor vine nutrition can also play a part – notably high nitrogen, and low calcium levels.

Spray options are now very limited due to withholding periods and spray efficacy is also very challenged at this stage of the season by the ability to achieve good internal bunch coverage. There are some late season botrytis spray options (*refer to the AWRI Dogbook*) however the efficacy, merits and benefit-cost of each will vary greatly from one situation to another. **Expert advice should be sought before using any of these products, and always seek approval from your grape purchaser before applying any of these products near harvest.** The AWRI also has a good range of resources on botrytis which can be found here - https://www.awri.com.au/information_services/ebulletin/2021/02/05/late-season-botrytis-webinar-and-key-

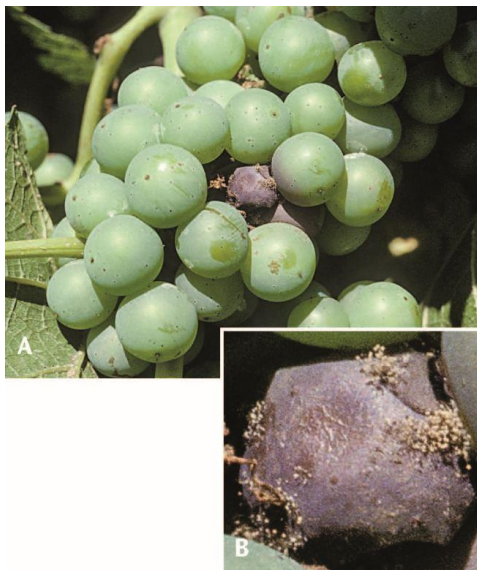
2020 - 2021 Actuals compared to Longer Term Averages - Nuriootpa

wetter dryer

cooler warmer

Month	Rainfall (mm)		Raindays (>1mm)		Min Temp (°C)		Max Temp (°C)		Growing Degree Days		Heat days >35°C		Heat days >40°C	
	20-21	LTA ¹	20-21	LTA ¹	20-21	LTA ¹	20-21	LTA ¹	20-21	LTA ¹	20-21	LTA ²	20-21	LTA ²
October	57	35	8	5.8	9.3	8.3	20.8	21.5	158	152	0	0	0	0
November	19	31	5	4.6	11.0	10.8	28.6	25.3	294	243	5	1.4	1	0.1
December	12	31	4	4.4	11.5	12.5	26.7	27.6	282	313	1	2.9	0	0.2
January	6	17	2	3	13.4	14.6	29.5	30.2	355	384	6	5.2	1	0.8
TOTAL	94	114	19	17.8					1089	1092	12	9.5	2	1.1

Source: Bureau of Meteorology Station 23373, ¹ Averages for 1996-2020, ² Averages for 1952-1999



LEFT

Botrytis sporulating on a split Riesling berry with adjacent berries also starting to show infection

Photo credit: Lodi Wine Growers

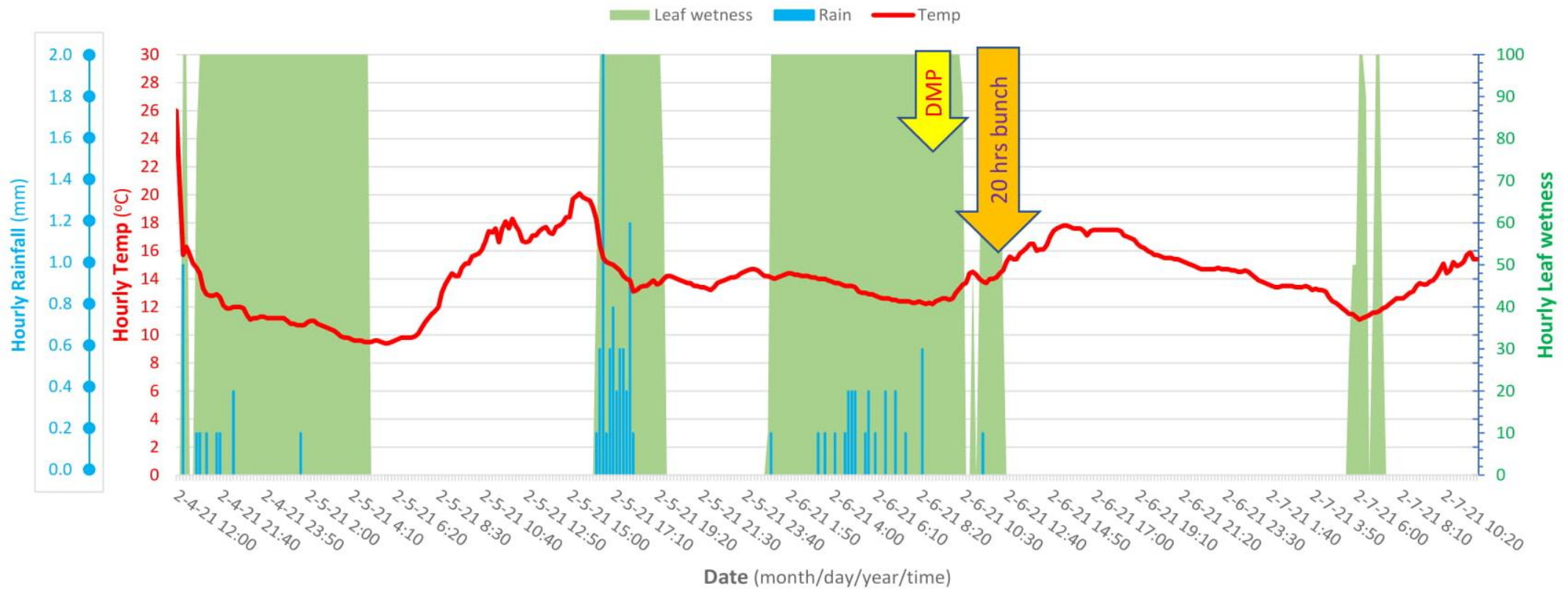


RIGHT

Powdery Mildew on berries

Photo credit: Richard Hamilton

NURIOOTPA Temperature, rainfall & leaf wetness: 12pm 4 Feb -> 12pm 7 Feb 2021



1. Potential Downy Mildew Primary Infection (DMP) in Barossa on 6 February ...

- This presents very low risk to crop and grape purity at this late stage of the season
- spraying not merited, but continue monitoring in late-ripening varieties and young vines

2. Protracted periods of rain & leaf wetness (~20hrs potential bunch wetness) across 4 to 6 February ...

- *potential* botrytis infections initiated on susceptible vine tissues in susceptible varieties (eg Eden Valley Riesling)
- future bunch-rot risk will depend on future weather events, variety, vineyard risks factors and how close the vineyard is to harvest
- spray options are very limited. Monitor for infections & seek expert advice & consult with your grape purchaser before considering any sprays

Some pre-vintage reminders

- ❖ Submit your completed spray diary records on time
- ❖ Remember 'Chain of responsibility' requirements – load limits, avoid juice spills, manage fatigue
- ❖ Carry your driver license with you – this is a legal requirement with all heavy vehicles inc tractors
- ❖ Vineyard biosecurity – see the VHA vintage toolkit <https://vinehealth.com.au/tools/vintage-toolkit/>
- ❖ What are your COVID-19 protocols for staff & contractors? What-if there is a lockdown in vintage?
- ❖ Vintage is a busy time but never compromise yours or other people's safety or wellbeing
- ❖ Ensure equipment is ready to go and have spare parts on hand - COVID may affect some supplies
- ❖ Contractor management compliance – expect more scrutiny in future from Fair Work Ombudsman
- ❖ Post-harvest irrigation and fertigation planning – early picked blocks shouldn't be left to the end
- ❖ Regularly update your yield estimates, and let your truck driver and winery know of any changes

Irrigation

The recent rains have contributed to soil moisture reserves to varying levels across sites, however on heavier clay-loams with slow infiltration; on soils on slopes, and with bare surfaces, surface moisture will dry very quickly in the next few days. *Smaller* rainfall events actually present an opportunity to enhance irrigation efficiency by irrigating immediately after the rain before the topsoil dries out completely (or in some cases during the rain) so as to achieve deeper irrigation penetration while evapotranspiration is low (or nil). The merits of this will depend on the soil type, water availability, time until harvest, the goals of the vineyard and the soil moisture status at the time. **Soil moisture monitoring devices are invaluable under these circumstances. Guessing or assuming soil moisture is sufficient for several days after rain can be a high-risk strategy, and especially when hot weather occurs shortly after smaller rainfall events.**

Subsoil moisture levels are very low in most vineyards and where pulse-type irrigation regimes have been adopted for most of the season, effective rootzone volumes may become quite restricted and unable to keep-up with peak demand when hot weather suddenly occurs. Anecdotally this also appears to increase the risk of berry splitting when rain follows heatwaves. Splitting is often due to water uptake through the berry skin more so than via the roots.

The significant leaf-loss seen in some vineyards after the first real heatwave of the season on 9-11 January was in many cases caused by insufficient wetted volume and/or subsoil moisture to support the rapid demands of the canopy and crop-load. **When yellow leaves first appear as a result of severe moisture stress, this is invariably due to a stress event ~3 days prior to appearance.** This is not to be confused though with very pale-yellow basal leaves that may appear slowly due to leaf-shading and age. Vines on healthy soils (good soil structure, biology & nutrition), and that are in 'balance' (ratio between crop load, leaf area and root mass), invariably cope better with low soil moisture and heat events. Surface composts and mulches also offer considerable benefits as has been shown in numerous trials.

Severe moisture-stress in the early stages of veraison is known to affect the uniformity of this process and subsequent ripening, and especially if there is significant leaf-loss also. Vineyards that escaped this via timing and/or optimal irrigation this year are likely to deliver more predictable ripening and results than those that didn't. **Ripening timing appears to be more disparate across sites this season, with some vineyards well ahead of average and others lagging behind.** In some cases, this will also require a revision of irrigation strategies and water budgets.

DISCLAIMER. This bulletin is provided by the Barossa Grape & Wine Association in conjunction with Rogers Viticulture to support best-practice and sustainable winegrowing in the region. The information in this bulletin is general in nature and is offered in good faith, however the specific application of information to individual circumstances will vary from one situation to another and the understanding of viticultural science is constantly evolving. The reader should consider all relevant information and seek expert advice prior to making their own judgement regarding management strategies and practices for their vineyard. All responsibility for vineyard management and outcomes rests with the reader.